

MIGRATIONAL MOVEMENTS AND HABITAT USAGE OF MIGRANT PASSERINES IN THE
GREAT LAKES REGION: OTTAWA NATIONAL WILDLIFE REFUGE, OHIO

PROGRESS REPORT-2011
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INTRODUCTION

In 2011, Black Swamp Bird Observatory continued a long term passerine migration study on the Ottawa National Wildlife Refuge complex and various other sites in the region. Specific goals of the project are to monitor the population status of Neotropical migrants in the Great Lakes region and to better understand the relationship between en-route habitat and their breeding ecology. Lake Erie represents a barrier to most passerine migrants. Passerines' reluctance to navigate open water results in major concentrations along the southwestern shore of Lake Erie, unparalleled in the Midwest. With continuing habitat loss both along the Lake Erie coast and inland, this study will assist in monitoring the effects of habitat isolation and degradation. There are only four small segments of beach ridge habitat remaining west of Port Clinton along Ohio's Lake Erie shoreline. The intensive bird use of these ridges in contrast to the adjacent condominium complexes and marinas signifies the importance of this habitat component in the Lake Erie marsh system. A wide range of migration corridor and stopover habitat occurs throughout the region, but these sites do not contain concentrations as high as the beach ridges. A wide variety of study sites are necessary to fully examine habitat use, migrational timing, and energetic condition of birds.

The importance of understanding avian migration and stopover habitat needs has greatly increased over the past two decades as tropical deforestation and temperate forest fragmentation have expanded and songbird populations have declined. Little information is known about the "problems" migrants contend with along their migratory routes (Morse 1980), not to mention the transition between spring migration and the breeding period. To offset the energetic costs of migration, birds deposit substantial lipid reserves which may reach 50% body weight among long distance intercontinental migrants (Berthold 1975). As lipid stores are depleted during migration, birds are capable of replenishing reserves in a few days at rates approaching 10% body weight per day (e.g. Barlein 1985; Biebach *et al.* 1986; Moore & Kerlinger 1987). These lipid deposits are obviously critical for a successful migration, and they may also provide a selective advantage to the migrant with energy reserves remaining (see Sinclair 1983; Ojanen 1984; Krapu *et al.* 1985; Krentz & Ankney 1987). Adequate stopover habitat may play an important role in delivering migrating passerines to their breeding grounds with sufficient energy reserves to successfully nest.

STUDY AREAS

Banding sites are centered along the western basin of Lake Erie in Ohio with additional coverage to the Ohio River and central basin of Lake Erie. The Navarre site is located on the largest remaining beach ridge along the western basin of Lake Erie and holds the most complete native beach ridge vegetative complex. Netting was also conducted on an active beach ridge outside the lakefront dike in Navarre during fall migration. This location allows the opportunity to study avian use of a beach ridge from its formation into maturity. The Shaker Lake site near Cleveland is several miles from Lake Erie and lies on a major riparian corridor to the lake. Habitats include a brook, marsh, scrub-shrub, and the border of a woods. The Petersburg site in southern Michigan is shrub habitat that is located past the lake effect zone for bird migration. This site provides a comparison of a habitat away from the lake proper and potentially gives some indications to how quickly migrants spread out across the landscape. The Creek Bend site is located approximately 15 miles due south of Lake Erie and provides a comparison to Navarre for lake effect and spring and fall comparisons for different species groups. Habitat is dominated by dogwood, old field, and a riparian corridor. The variety of habitat types and distances from the lake surveyed allows us to document variation in migrational timing, habitat selection, and movement.

METHODS AND MATERIALS

In 2011, migrating and resident passerines were sampled on the Navarre Unit of the Ottawa National Wildlife Refuge and three other sites in the Great Lakes region: Creek Bend, Shaker Lakes, and Petersburg (Figure 1). Sites operated near Cleveland and Lindsey, Ohio, and Monroe, Michigan provide comparisons to the refuge site that is located at a major passerine migration staging area. Banding and point count efforts covered a minimum of 75% of the migration period for the study site. Every attempt was made to equalize any un-sampled parts of the migration period at the beginning and ending time frame. The migration period covers both short distance and long distance (Neotropical) migrants. Spring migration operation in 2011 began mid-April and continued through early-June. Fall migration banding was July 1 to early November.

Mist netting was conducted from one-half hour before sunrise to at least 11:00 AM on each day of operation, weather permitting. Birds were captured utilizing 2.6 x 12 meter mist nets of 30mm mesh size. All birds were removed from the net, with the band and net recorded if previously banded, and placed in a mesh holding bag until processing. During processing, each bird was banded with a standard U.S. Fish & Wildlife Service leg band, measured by closed wing chord, body mass recorded, and visually inspected for subcutaneous fat deposits using a 6-point ordinal scale (Helms & Drury 1960). Birds were sexed and aged by the use of plumage characteristics (Pyle 1997) and guidelines of the Bird Banding Manual and Woods Manual (Woods 1969). Weather data were compiled from hourly readings of Toledo Edison's Davis Besse Nuclear Power Station.

Point counts were conducted during both spring and fall migration to complement mist-netting operations and document species such as larger birds that are not typically captured by mist-nets. Counts were conducted at points spaced a minimum of 100 meters apart throughout the banding

stations. Counts were conducted for five minutes in which all birds seen or heard were recorded. Counts were run after net set up each morning permitted by weather and avian abundance. Point counts were canceled on extremely high wind or high bird activity days.

Each station kept a daily Bird List to document presence/absence for the site. This method complements the banding and point counts by acknowledging all species seen on a given day. This assists in rare species documentation and provides more complete information on arrival and departure dates for all species.

RESULTS AND DISCUSSION

SPRING

Spring migration was monitored, weather permitting, daily in the Navarre Unit and when personnel were available at the Shaker Lakes, Creek Bend, and Petersburg sites in 2011. Spring 2011 exemplified how averages don't always tell the whole story. The temperature trend followed the normality curve closely over the season but saw strong peaks and valleys (Figure 2). This represented well defined low pressure systems that produced the strong waves of birds witnessed from late April to late May. Overall, 2011 was marked by record class migration and bird volume from mid April to June.

Through our research, we have found large numbers of Neotropical and short-distance migrants arrive in three "waves". The first wave is dominated by male White-throated Sparrow, Hermit Thrush, male Myrtle Warbler, and male Ruby-crowned Kinglet, and occurs around 24 April. In 2011, this wave was very strong peaking 26 April and 01 May. The second wave occurs 07-13 May and is represented by the greatest species diversity of the spring. It is dominated by female White-throated Sparrow, Swainson's Thrush, female Myrtle Warbler, female Ruby-crowned Kinglet, and male Magnolia Warbler. A second pulse of this wave comes five to seven days later, and usually has the largest volume and contains the same dominant species. This second wave was excellent and occurred 06-07 May with a strong second pulse on 13-14 May. The third wave normally comes around Memorial Day weekend and is dominated by female Magnolia Warbler, American Redstart, Mourning Warbler, vireos, and flycatchers. In 2011, the third wave appeared 22-24 May with a slight second pulse 29 May.

Navarre Banding Station, Ottawa County, Ohio (413-0830)

In spring 2011, the Navarre banding station was operated on 45 days for 6,510.3 net hours. Including hummingbirds, 10,360 new birds were banded and a total of 11,992 birds handled (Table 1). The capture rate was 183.4 birds/100 net hours. One hundred and nine species were banded in Navarre during spring 2011 (Table 2). The most unusual species and subspecies included Red-headed Woodpecker, Cerulean Warbler, Yellow-throated Warbler, Whip-poor-will, Red-tailed Hawk, Savannah Sparrow, and the first LeConte's Sparrow for this site. The ten most abundant species banded were Myrtle Warbler (1,366), Magnolia Warbler (738), White-throated Sparrow

(724), Yellow Warbler (563), Traill's (Alder/Willow) Flycatcher (514), Gray Catbird (514), Western Palm Warbler (464), Nashville Warbler (405), American Redstart (352), and Common Yellowthroat (350).

Point counts were initiated in 1995 as a part of the data collection at the Navarre site. These counts provide the best data for larger birds not sampled by mist nets. Point counts were conducted on 37 days during spring 2011. One hundred and thirty-five species and 15,470 individuals were recorded (Table 3). Canada Goose, Northern Cardinal, Red-winged Blackbird, Common Grackle, Tree Swallow, and American Robin were observed each count day. The most abundant species recorded was Blue Jay (2,796) followed by Red-winged Blackbird (2,517), Canada Goose (1,102), Tree Swallow (872), and Yellow Warbler (798).

Creek Bend Banding Station, Sandusky County, Ohio (412-0832)

This site permits comparison to the Lake Erie coastal sites as a riverine travel lane. 2011 was the 4th year of data collection at this site. Banding operations were conducted on 4 days with 63 new birds banded in 144 net hours (43.8 birds/100 net hours) (Table 4). Twenty species (Table 5) were banded with the five most abundant species being American Goldfinch (19), Western Palm Warbler (9), Tree Swallow (7), Field Sparrow (4), and Common Yellowthroat (4).

Petersburg Banding Station, Monroe County, Michigan (415-0833)

This site is located west of Lake Erie and north of Toledo and permits comparison to the Lake Erie sites as birds migrate around the lake and disperse through the landscape. 2011 was the 17th year of banding at this site. Banding operations were conducted on nine days with 232 new birds banded in 1,496.7 net hours (15.5 birds/100 net hours) (Table 6). Fifty-three species (Table 7) were banded with the five most abundant species banded being American Redstart (25), Myrtle Warbler (17), Magnolia Warbler (13), Swainson's Thrush (13), and Gray Catbird (12).

Point counts were conducted on nine days during spring 2011. Thirty-six species with 305 individuals were recorded (Table 8). American Robin, Northern Cardinal, Common Grackle, Field Sparrow, and Black-capped Chickadee were observed each count day. The most abundant species recorded was American Robin (61) followed by Common Grackle (30), Northern Cardinal (30), Black-capped Chickadee (28), and Field Sparrow (27).

Shaker Lakes Banding Station, Cuyahoga County, Ohio (412-0813)

This site is located east of Cleveland at the Nature Center of Shaker Lakes and 2011 was the tenth year of the banding operation. This site permits comparison to western Lake Erie sites as birds migrate along Lake Erie and disperse through the landscape. Banding operations were conducted Mondays, Wednesdays, and Fridays and was conducted on eighteen days, with 276 new birds banded in 614 net hours (45.0 birds/100 net hours). A total of 359 birds were handled (58.5 birds/100 net hours) during spring migration (Table 9). Fifty-four species (Table 10) were banded with the ten

most abundant species banded being Ruby-crowned Kinglet (42), Gray Catbird (27), American Robin (20), American Goldfinch (15), White-throated Sparrow (15), Canada Warbler (12), Magnolia Warbler (11), Common Yellowthroat (9), Northern Waterthrush (8), and Nashville Warbler (7).

Point counts were conducted on 18 days during spring 2011. Seventy-two species with 819 individuals were recorded (Table 11). The most abundant species recorded was American Robin (91) followed by American Goldfinch (81), Canada Goose (71), Song Sparrow (60), and Tufted Titmouse (51).

FALL

Fall migration starts in July for many species and some breeding Neotropical migrants (e.g., Yellow Warbler) have left the study area by mid-August. Average fall temperatures were near normal with below average temperature in most of September and slightly elevated temperatures in October (Figure 3). Fall bird migration is dominated by different stimuli than in spring. Weather conditions appear less important and food availability appears to be a key factor.

Navarre Banding Station, Ottawa County, Ohio (413-0830)

The Navarre main station was operated 59 days for 7,336.1 net hours. Four thousand three hundred and thirty-three birds were banded with a total of 5,660 birds handled including recaptures (Table 12). This was the 19th fall season in which an extensive netting effort had been conducted on a daily basis. The capture rate for 2011 was 77.2 birds/100 net hours (+1% from 2010). A total of 91 species were banded during fall 2011 (Table 13). The ten most abundant species banded were Blackpoll Warbler (762), Swainson's Thrush (463), Myrtle Warbler (399), Gray-cheeked Thrush (325), White-throated Sparrow (228), Gray Catbird (220), Magnolia Warbler (184), Hermit Thrush (144), Golden-crowned Kinglet (112), and Common Grackle (110).

Fall point counts were conducted on 52 days during 2011. A total of 12,982 individuals of 100 species were recorded (Table 14). The Northern Cardinal was observed on all count days. The most abundant species were Red-winged Blackbird (4,957), Canada Goose (1,178), Common Grackle (1,016), European Starling (778), and White-throated Sparrow (450).

For the 19th year, additional nets were run on an active beach ridge just outside the lake front dike near the main study site. This ridge has one band of 50-60 feet tall Cottonwoods about 40 feet wide and 100 yards long. The ridge presents an opportunity to document avian use as the habitat matures. This ridge has seen considerable loss of sand the past four years with a major narrowing of the vegetated portion resulting in reduced habitat with higher levels of Lake Erie. In 2011, five nets were run on 52 days for 1,409 net hours (Table 15). The capture rate for fall 2011 was 89.6 birds/100 net hours. One thousand ninety-two birds of 68 species were banded on the beach ridge (Table 16). The top ten species banded were Blackpoll Warbler (394), Gray Catbird (96), Myrtle Warbler (82), Hermit Thrush (35), Tennessee Warbler (33), Golden-crowned Kinglet (33), Swainson's Thrush (32), Common Yellowthroat (27), White-throated Sparrow (26), and Bay-breasted Warbler (25).

Creek Bend Banding Station, Sandusky County, Ohio (412-0832)

Banding operations were conducted on 25 days with 1,601 new birds banded in 1,096 net hours (146.1 birds/100 net hours) (Table 17). Sixty-five species (Table 18) were banded with the ten most abundant species being American Goldfinch (811), Song Sparrow (89), Indigo Bunting (78), White-throated Sparrow (64), Myrtle Warbler (55), Swamp Sparrow (43), Common Yellowthroat (40), Magnolia Warbler (38), Nashville Warbler (36), and Lincoln Sparrow (29). The large volume of American Goldfinches banded at this site was a direct result of a 5 acre patch of forbs and second year sunflowers next to the banding station. This food plot was part of the County Park District land management plan for the year. Changes to this management rotation will affect species captured and will need to be documented on an annual basis to interpret banding results over time.

Petersburg Banding Station, Monroe County, Michigan (415-0833)

Banding operations were conducted on 6 days with 135 new birds banded in 918.4 net hours (14.7 birds/100 net hours) (Table 19). A total of 166 birds were handled (18.1 birds/100 net hours). Thirty-four species (Table 20) were banded with the five most captured species being Blackpoll Warbler (19), Magnolia Warbler (13), Ovenbird (9), Gray Catbird (8), and Black-throated- Green Warbler (7).

Point counts were conducted on 6 days during fall 2011. Sixteen species with 123 individuals were recorded (Table 21). Blue Jay was observed each count day. The most abundant species recorded were American Robin (39) and Blue Jay (27)

Shaker Lakes banding Station, Cuyahoga County, Ohio (412-0813)

Banding operations were carried out on Mondays, Wednesdays, and Fridays and were conducted on twenty-three days with 725 new birds banded in 708.5 net hours (102.3 birds/100 net hours). A total of 803 birds were handled (113.3 birds/100 net hours) during fall migration (Table 22). Fifty-one species (Table 23) were banded with the ten most abundant species being American Goldfinch (190), Myrtle Warbler (72), Swainson's Thrush (56), Magnolia Warbler (49), Nashville Warbler (34), White-throated Sparrow (31), Ruby-crowned Kinglet (23), Gray Catbird (21), Golden-crowned Kinglet (21), and American Robin (18).

Point counts were conducted on 23 days during fall 2011. Forty-five species and 1,581 individuals were recorded (Table 24). The most abundant species recorded was Chimney Swift (887) followed by American Goldfinch (171), American Crow (101), Canada Goose (87), and American Robin (45).

SUMMARY BANDINGS

Total combined bandings for passerine migration 2011 for the Black Swamp Bird Observatory is in Table 25. Totals without parentheses are for the National Wildlife Refuge complex. The ten most abundant species banded on Ottawa NWR complex were Myrtle Warbler (1,847), Blackpoll Warbler (1,266), White-throated Sparrow (978), Magnolia Warbler (941), Gray Catbird (830), Swainson's

Thrush (754), Yellow Warbler (576), Traill's Flycatcher (516), Nashville Warbler (492), and Western Palm Warbler (471). Inclusive totals of all sites were topped by Myrtle Warbler (1,995), Blackpoll Warbler (1,319), White-throated Sparrow (1,101), American Goldfinch (1,082), Magnolia Warbler (1,065), Gray Catbird (926), Swainson's Thrush (844), Yellow Warbler (590), Nashville Warbler (580), and Common Yellowthroat (524). A combined total of 120 species of 18,817 individuals (93.0 birds/100 net hrs) were banded. Totals for each study site and for each season are shown in Table 26. Species with greater than 50 individuals sampled had fall age ratios generally lower than 2010 (Table 27).

RETURNS AND RECOVERIES

A long term study of this type has an added benefit to develop return rates and survival rates over time. One assumption that has not been verified is that passerines often return to the same breeding grounds to nest. There is substantial evidence for this but more research is needed to confirm the rate of this phenomenon. There is less evidence available regarding site fidelity to migration stopover sites. During 2011, 294 birds of 22 species were captured as returning birds at the Navarre sites (Table 28). This total includes 83 Yellow Warblers with the oldest being banded in 2005, 66 Gray Catbirds, 18 Common Yellowthroats (oldest from 2006), 29 Red-winged Blackbird (oldest from 2005), 19 Northern Cardinals (oldest from 2006), and 13 Baltimore Orioles (oldest from 2005). The long term study at Navarre has resulted in state longevity records for the Yellow Warbler, Prothonotary Warbler, Warbling Vireo, Eastern Wood Pewee, Brown Creeper, Northern Waterthrush, Ovenbird, Great-crested Flycatcher, Cedar Waxwing, and Hermit Thrush. The Yellow Warbler record surpasses the species record as reported by the Bird Banding Laboratory. Continued analysis in this area will hopefully shed some light on turnover rate and site fidelity in some species. An additional 45 birds of 15 species were return captures at Shaker Lakes in 2011 (Table 29). A Northern Cardinal was captured that were first banded in 2005. Creek Bend has had little earlier field work but had 53 individuals of 12 species return from 2008 - 2010 bandings (Table 30). Petersburg had 23 returns of 8 species (Table 31). Several foreign captures were made of study birds and are reported in Table 32 as well as four foreign banded bird that were captured during the 2011 study year.

ENERGETIC CONDITION

The relationship between energetic condition during migration and breeding success is not well known in passerines. There are many factors that could affect the amount of fat a bird may carry at any given time. We are collecting data on several factors that may affect lipid deposition, but it will be several years before those trends may be tied to productivity. For 2011, 35 species (Table 33) had adequate sample sizes in both 2010 and 2011 to look at the changes in average fat deposits during spring migration. There was considerable variability in species when comparing 2009 and 2010. Twenty-eight species indicated higher fat deposits in 2010 and 7 in 2011.

For passerines it is extremely difficult to acquire an adequate sample of breeding pairs to assess annual production on the breeding grounds. Considerable work has been conducted on larger species, especially waterfowl, on the relationship of spring body condition and reproductive success that

breeding season. One method of assessing annual production in passerines is to compare fall age ratios (e.g. production) to spring migration body condition where an adequate sample may be acquired. Of 14 species with adequate sample sizes of spring fat and fall age ratios, eight appeared to show a similar trend in fat between 2010 and 2011 and the percent change in age ratios for these species between the two years. This relationship will be monitored for potential usefulness in assessing species productivity.

In 2011, fall fat composition was higher in 2011 in all 18 species with 15 species significantly higher ($p < .05$) (Table 34).

DISCUSSION

Black Swamp Bird Observatory has conducted bird migration monitoring research in the Lake Erie Marsh Region for more than 30 years. Annual variation in migrational monitoring numbers makes statements concerning populations very risky, even with long-term datasets. A record number of birds were banded this spring at the Navarre study site. This followed one of the lowest totals recorded in 2010. What contributes to this great variability and how can it be quantified is a challenge. Does the variability represent true population fluctuation, is it an artifact of sample design, vagrancy of weather patterns, or some combination of these and untold factors. Understanding these vital questions will provide considerable value to bird conservation initiatives both today and into the future

Spring 2011 represented a rare instance that resulted in heavy movement for all three waves of migration along the western basin of Lake Erie. Seldom does macro weather patterns hold for as long a duration as seen this year. Temperature patterns, used as an indicator for weather supported these strong movement spikes during 2011. The consistent warm fronts resulted in large and defined concentrations being funneled into the Lake Erie region.

The spectacular spring was followed up by a very good fall. The highlight of fall had to be the influx of Blackpoll Warblers and the encounter of seven different birds banded in previous years. In nearly 30 years of migrational monitoring, only two birds banded in one migration season have been encountered in a later season. The importance of the western basin for this species can not be understated.

ENVIRONMENTAL EDUCATION

A secondary goal of this study is to educate the general public on avian migration, research, habitat management, and ecosystems. During 2011, project personnel entertained 25 groups at Navarre and the Black Swamp Bird Observatory Nature Center educating 1,800 individuals on migration and banding. In addition, five presentations were made to 160 people on avian ecology and migration. As a part of International Migratory Bird Day events, banding demonstrations were presented on the Magee Marsh State Wildlife Area for some 9,000 people.

MANAGEMENT RECOMMENDATIONS

Adequate stopover habitat is a necessity if migrating birds are to successfully reach breeding and wintering home ranges each year. While the Lake Erie marsh region may contain extremely important breeding habitats for some species, it is of much greater importance in meeting migration stopover needs. The combination of quality marshland, scrub-shrub upland and swamps, and wooded beach ridges provide food, water, and shelter for migrants. Intensively managed wetlands form the base for this habitat complex in the Lake Erie Marsh Region. The invertebrate populations required by the massive bird movement are born from these wetlands and shelters in the scrub and on beach ridges. This scrub-shrub and beach ridge habitat provides shelter from weather and protection from predators as well as their food source. Gray Dogwood dominates the shrub habitat providing vast surface area for invertebrates as well as fall migrating birds. Any management scheme at this latitude needs to recognize the over-riding importance of the region as stopover habitat for migrants. With the exception of the Gulf coast, no other region of eastern North America can demonstrate concentrations of avian migrants like Lake Erie's coast.

Management of these habitats needs to ensure protection of the remaining beach ridges and to provide both healthy wetlands and adequate shrub habitat. The mature forests of the Great Black Swamp once held many breeding species, but this habitat should not be a management priority. While migrational needs can be addressed in concentrated habitat units, to meet acreage requirements to influence breeding volume is presently beyond management resources. Wetland and moist soil habitats need to be managed to ensure water inundation during critical spring months to provide the substrate required for abundant invertebrate production. A well planned rotation of management units must be incorporated for summer and fall management plans to accommodate the habitat needs of the different migrant species, including deep water marshes, shallow water marshes, and moist soil areas. Shrub and grassland habitat management should consider migration as well as breeding needs. Management scenarios should also include food and cover during migration as well as protection during breeding season. Dike systems should be designed to incorporate scrub borders to provide travel lanes for migrants to mimic the limited beach ridges and to augment passerine breeding in shrub management units. Research has not been conducted to determine to what extent dike nesting success may influence overall regional avian production. This needs to be assessed to fully examine this habitat use. In theory, dikes should be looked to as additional habitat for breeders spilling over from more productive shrub habitat blocks. Scrub-shrub habitats need to be maintained to provide adequate surface area for invertebrates, cover for migrant and breeders, and to encourage fruit production for fall migration. This will require periodic rejuvenation of units on a rotational basis.

Wise management of wetlands, shrub, grasslands, and riparian woodlands will not only benefit passerines on a year-round basis, but will also enhance other avian groups, mammals, reptiles, amphibians, and native plant associations.

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Table 1. Daily banding totals for Navarre, spring 2011.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds*	Total bird/ 100 net hr
412	25.0	23	92.00	1	0	25	100.00
413	101.0	58	57.43	5	3	66	65.35
414	92.0	15	16.30	5	7	28	30.44
415	RAIN						
416	RAIN						
417	93.2	15	16.09	2	3	20	21.46
418	RAIN						
419	RAIN						
420	96.6	67	69.36	2	3	74	76.61
421	113.1	25	22.10	0	4	29	25.64
422	RAIN						
423	138.0	159	115.22	0	3	163	118.12
424	115.0	57	49.57	3	9	69	60.00
425	38.4	9	23.44	0	5	14	36.46
426	161.0	374	232.30	4	6	384	238.51
427	109.3	180	164.68	2	5	187	171.09
428	RAIN						
429	145.6	174	119.51	3	9	187	128.43
430	138.0	29	21.01	2	11	43	31.16
501	178.3	722	404.94	4	11	737	413.35
502	161.0	238	147.83	4	22	264	163.98
503	RAIN						
504	185.9	327	175.90	11	52	392	210.87
505	130.4	55	42.18	4	20	79	60.58
506	177.5	1116	628.73	4	8	1130	636.62
507	207.0	742	358.45	4	32	781	377.30
508	172.5	168	97.39	14	42	225	130.44
509	168.6	85	50.42	9	54	151	89.56
510	189.8	295	155.43	8	37	342	180.19
511	151.4	144	95.11	12	39	195	128.80
512	166.8	383	229.62	13	19	415	248.80
513	197.4	652	330.29	21	19	692	350.56
514	187.8	403	214.59	18	46	468	249.20
515	RAIN						
516	69.0	92	133.33	6	62	160	231.88
517	126.5	112	88.54	6	111	229	181.03
518	153.4	101	65.84	5	110	217	141.46
519	138.0	263	190.58	3	55	321	232.61
520	145.6	118	81.04	6	51	175	120.19
521	153.4	192	125.16	9	33	235	153.19
522	147.6	779	527.78	3	15	797	539.97
523	197.4	380	192.50	8	50	438	221.88
524	199.4	436	218.66	4	52	493	247.24
525	153.4	211	137.55	3	62	276	179.92
526	164.8	282	171.12	5	82	369	223.91
527	134.2	135	100.60	4	69	208	154.99
528	193.6	214	110.54	4	86	304	157.03
529	120.8	186	153.97	0	30	216	178.81
530	120.8	75	62.09	7	19	101	83.61
531	126.5	102	80.63	3	12	117	92.49
601	124.6	47	37.72	1	13	61	48.96
602	130.4	31	23.77	7	18	56	42.95
603	120.8	24	19.87	4	20	48	39.74
604	149.5	65	43.48	1	12	78	52.18
TOTAL	6510.3	10360	159.13	244	1431	11942	183.43

* Total birds include Brown-headed Cowbirds and European Starlings released unbanded.

Table 2. Spring banding totals, Navarre, 2011.

Species	Banded	Species	Banded	Species	Banded
Sharp-shinned Hawk	12	Song Sparrow	21	Yellow-th. Warbler	1
Cooper Hawk	1	Lincoln Sparrow	112	Black-th.-Green Warbler	107
Red-tailed Hawk	1	Swamp Sparrow	130	Pine Warbler	9
American Kestrel	1	Fox Sparrow	22	Western Palm Warbler	464
Yellow-billed Cuckoo	3	Eastern Towhee	7	Prairie Warbler	1
Black-billed Cuckoo	5	Northern Cardinal	68	Ovenbird	198
Hairy Woodpecker	5	Rose-breasted Grosbeak	24	Northern Waterthrush	157
Downy Woodpecker	6	Indigo Bunting	64	Louisiana Waterthrush	1
Yellow-bellied Sapsucker	2	Scarlet Tanager	6	Connecticut Warbler	10
Red-headed Woodpecker	1	Summer Tanager	3	Mourning Warbler	126
Red-bellied Woodpecker	2	Tree Swallow	23	Common Yellowthroat	350
Yellow-shafted Flicker	7	Cedar Waxwing	17	Yellow-breasted Chat	3
Whip-poor-will	2	Red-eyed Vireo	154	Hooded Warbler	11
Ruby-th. Hummingbird	80	Philadelphia Vireo	25	Wilson's Warbler	259
Eastern Kingbird	5	Warbling Vireo	23	Canada Warbler	220
Great-crested Flycatcher	24	Yellow-throated Vireo	1	American Redstart	352
Eastern Wood Pewee	42	Blue-headed Vireo	32	Gray Catbird	514
Yellow-bellied Flycatcher	199	White-eyed Vireo	3	Brown Thrasher	15
Acadian Flycatcher	24	Black and White Warbler	110	Carolina Wren	6
Trail's Flycatcher	514	Prothonotary Warbler	11	House Wren	56
Least Flycatcher	59	Worm-eating Warbler	2	Winter Wren	4
Blue Jay	23	Blue-winged Warbler	21	Marsh Wren	1
Brown-headed Cowbird	2	Brewster's Warbler	1	Brown Creeper	18
Red-winged Blackbird	100	Nashville Warbler	405	White-breasted Nuthatch	1
Orchard Oriole	1	Orange-crowned Warbler	17	Red-breasted Nuthatch	7
Baltimore Oriole	47	Tennessee Warbler	84	Black-capped Chickadee	2
Rusty Blackbird	2	Northern Parula	16	Golden-crowned Kinglet	6
Common Grackle	22	Cape May Warbler	26	Ruby-crowned Kinglet	129
Purple Finch	2	Yellow Warbler	563	Blue-gray Gnatcatcher	130
American Goldfinch	33	Black-th.-Blue Warbler	83	Wood Thrush	38
Savanna Sparrow	1	Myrtle Warbler	1,366	Veery	96
LeConte's Sparrow	1	Magnolia Warbler	738	Gray-cheeked Thrush	48
White-crowned Sparrow	71	Cerulean Warbler	2	Swainson's Thrush	259
Gambel's Wh.-cr. Sparrow	4	Chestnut-sided Warbler	164	Hermit Thrush	156
White-throated Sparrow	724	Bay-breasted Warbler	38	American Robin	31
Field Sparrow	9	Blackpoll Warbler	110		
Slate-colored Junco	10	Blackburnian Warbler	35		

Table 3. Number of days observed and totals of species seen on point counts, Navarre spring 2011.

Species	# days	#Observed	Species	# days	#Observed	Species	# days	#Observed
Pied-billed Grebe	31	145	E. Wood Pewee	11	26	Nashville Warbler	7	29
Herring Gull	19	59	Yellow-bel. Flycatcher	8	12	Tennessee Warbler	13	38
Ring-billed Gull	27	73	Acadian Flycatcher	3	4	Northern Parula	8	12
Bonaparte's Gull	2	2	Alder Flycatcher	6	13	Cape May Warbler	4	5
Caspian Tern	3	3	Willow Flycatcher	13	78	Yellow Warbler	31	798
Black Tern	1	1	Least Flycatcher	8	14	Black-th.-Blue Warbler	9	21
Dou.-cr. Cormorant	18	92	Blue Jay	32	2796	Myrtle Warbler	13	203
Least Bittern	4	5	E. Starling	34	250	Magnolia Warbler	17	93
Mallard	13	26	Bobolink	3	6	Chestnut-sided Warbler	18	33
Gadwall	4	6	Brown-headed Cowbird	36	282	Bay-breasted Warbler	3	5
Wood Duck	21	60	Yellow-head. Blackbird	1	1	Blackpoll Warbler	13	41
Lesser Scaup	1	3	Red-winged Blackbird	37	2517	Blackburnian Warbler	2	2
Canada Goose	37	1102	Orchard Oriole	1	1	Black-th.-Green Warbler	7	27
Trumpeter Swan	10	30	Baltimore Oriole	27	261	Pine Warbler	3	4
Gr.-blue Heron	33	109	Rusty Blackbird	6	43	W. Palm Warbler	8	40
Great Egret	17	22	Common Grackle	37	405	Ovenbird	11	27
Snowy Egret	1	9	Purple Finch	3	3	No. Waterthrush	20	63
Black-cr. N. Heron	2	2	Am. Goldfinch	26	156	Connecticut Warbler	10	11
Sandhill Crane	6	13	Pine Siskin	2	3	Mourning Warbler	8	21
Virginia Rail	1	1	White-cr. sparrow	8	33	Com. Yellowthroat	31	199
Sora	7	7	White-th. Sparrow	23	497	Yellow-breasted Chat	1	1
Common Moorhen	1	1	Slate-colored Junco	2	4	Hooded Warbler	1	1
Am. Coot	11	22	Song Sparrow	36	193	Wilson's Warbler	15	70
Lesser Yellowlegs	1	1	Lincoln Sparrow	6	6	Canada Warbler	11	27
Solitary Sandpiper	1	1	Swamp Sparrow	19	51	American Redstart	23	130
Killdeer	2	3	Eastern Towhee	8	16	Gray Catbird	32	369
Mourning Dove	13	25	No. Cardinal	37	477	Brown Thrasher	27	60
Rock Pigeon	1	1	Rose-br. Grosbeak	11	27	Carolina Wren	11	25
Turkey Vulture	1	1	Indigo Bunting	22	88	House Wren	30	156
Sharp-sh.. Hawk	2	4	Scarlet Tanager	5	6	Winter Wren	1	2
Cooper's Hawk	1	1	Purple Martin	11	37	Marsh Wren	12	20
Red-tailed Hawk	1	1	Cliff Swallow	1	3	Brown Creeper	1	1
Bald Eagle	6	7	Barn Swallow	24	94	Red-breasted Nuthatch	2	2
American Kestrel	1	1	Tree Swallow	37	872	Tufted Titmouse	1	1
Yellow-billed Cuckoo	3	9	Bank Swallow	9	44	Black-capped Chickadee	17	29
Black-billed Cuckoo	7	21	Rough-winged Swallow	2	2	Ruby-crowned Kinglet	18	62
Belted Kingfisher	1	1	Cedar Waxwing	16	506	Blue-gray Gnatcatcher	19	110
Downy Woodpecker	24	60	Red-eyed Vireo	18	73	Wood Thrush	11	15
Red-h. Woodpecker	1	1	Warbling Vireo	19	63	Veery	5	13
Red-b. Woodpecker	11	12	Blue-headed Vireo	2	2	Gray-cheeked Thrush	4	5
Yellow-shafted Flicker	16	34	White-eyed Vireo	1	1	Swainson's Thrush	15	33
Chimney Swift	16	47	Black & White Warbler	18	46	Hermit Thrush	1	19
Ruby-th. Humming.	4	6	Prothonotary Warbler	19	27	American Robin	37	233
Eastern Kingbird	17	40	Worm-eating Warbler	3	3	Unk. warbler	17	280
Great-cr. Flycatcher	8	15	Blue-winged Warbler	4	4			
Eastern Phoebe	1	1	Golden-winged Warbler	2	2			

Table 4. Daily banding totals for Creek Bend, spring 2011.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
505	24.0	18	75.0	6	0	24	100.0
506	40.0	30	75.0	4	2	36	90.0
509	40.00	11	27.5	7	0	18	45.0
510	40.0	4	10.0	3	0	7	17.5
TOTAL	144.0	63	43.75	20	2	85	59.03

Table 5. Daily banding totals Creek Bend, spring, 2011

Species	Banded	Species	Banded	Species	Banded
Least Flycatcher	1	Warbling Vireo	1	Common Yellowthroat	4
American Goldfinch	19	Black and White Warbler	1	Gray Catbird	1
White-crowned Sparrow	1	Nashville Warbler	3	House Wren	1
White-throated Sparrow	2	Yellow Warbler	3	Blue-gray Gnatcatcher	2
Field Sparrow	4	Myrtle Warbler	1	American Robin	2
Lincoln Sparrow	3	Western Palm Warbler	9	Eastern Bluebird	1
Tree Swallow	7	Ovenbird	1		

Table 6. Daily banding totals for Petersburg, spring 2011.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
409	165.0	26	15.76	7	0	33	20.00
505	180.0	25	13.89	2	7	34	18.89
509	181.7	34	18.71	5	9	48	26.42
511	185.0	40	21.62	3	7	50	27.03
512	178.3	35	19.63	2	5	42	23.56
517	110.0	31	28.18	2	7	40	36.36
521	171.7	15	8.74	1	9	25	14.56
522	150.0	10	6.67	0	4	14	9.33
524	175.0	16	9.14	0	5	21	12.00
TOTAL	1496.7	232	15.50	22	53	307	20.51

Table 7. Daily banding totals Petersburg, spring, 2011.

Species	Banded	Species	Banded	Species	Banded
Wood Duck	1	Indigo Bunting	2	Canada Warbler	2
Hairy Woodpecker	1	Black and White Warbler	6	American Redstart	25
Downy Woodpecker	3	Blue-winged Warbler	2	Gray Catbird	12
Eastern Wood Pewee	1	Nashville Warbler	2	Brown Thrasher	3
Yellow-bellied Flycatcher	1	Yellow Warbler	6	House Wren	2
Trail's Flycatcher	2	Black-th.-Blue Warbler	2	Red-breasted Nuthatch	1
Least Flycatcher	4	Myrtle Warbler	17	Tufted Titmouse	5
Blue Jay	3	Magnolia Warbler	13	Black-capped Chickadee	3
Brown-headed Cowbird	1	Chestnut-sided Warbler	10	Golden-crowned Kinglet	5
Red-winged Blackbird	1	Bay-breasted Warbler	1	Ruby-crowned Kinglet	6
Baltimore Oriole	2	Blackpoll Warbler	1	Wood Thrush	4
Common Grackle	4	Black-th.-Green Warbler	5	Veery	5
American Goldfinch	4	Western Palm Warbler	6	Gray-cheeked Thrush	3
White-throated Sparrow	7	Ovenbird	2	Swainson's Thrush	13
Chipping Sparrow	5	Northern Waterthrush	2	Hermit Thrush	1
Slate-colored Junco	7	Mourning Warbler	2	American Robin	8
Northern Cardinal	7	Common Yellowthroat	2	Eastern Bluebird	1
Rose-breasted Grosbeak	2	Wilson Warbler	1		

Table 8. Point count days conducted and species totals, spring season, Petersburg, 2011.

Species	# days	# birds	Species	# days	# birds	Species	# days	# bird
Mallard	2	5	Am. Crow	4	9	No. Cardinal	9	30
Canada Goose	6	10	European Starling	1	1	Rose-br. Grosbeak	3	4
Ring-necked Pheasant	3	4	Br.-headed Cowbird	3	3	Yellow Warbler	1	1
Wild Turkey	1	1	Red-winged Blackbird	3	5	Common Yellowthroat	2	2
Killdeer	2	3	Baltimore Oriole	2	2	Gray Catbird	7	19
Mourning Dove	5	6	Common Grackle	8	30	Brown Thrasher	1	1
Great Horned Owl	1	1	Am. Goldfinch	3	3	House Wren	1	1
Downy woodpecker	2	2	White-th. Sparrow	1	1	White-br. Nuthatch	2	2
Red-bel. Woodpecker	1	1	Chipping Sparrow	4	5	Tufted Titmouse	5	5
Yellow-sh. Flicker	1	2	Field Sparrow	8	27	Black-cap Chickadee	9	28
Eastern Wood Pewee	1	1	Song Sparrow	1	1	Wood Thrush	2	4
Blue Jay	7	22	Eastern Towhee	2	2	American Robin	9	61

Table 9. Daily banding totals for Shaker Lakes, spring 2011.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
415	35.0	19	54.29	5	0	24	68.57
422	31.5	36	114.29	5	7	48	152.38
425	30.0	12	40.00	1	1	14	46.67
427	33.0	13	39.39	1	2	16	48.49
429	31.5	12	38.10	1	2	15	47.62
502	33.0	10	30.30	3	1	14	42.42
504	30.0	9	30.00	6	3	18	60.00
506	32.0	26	81.25	0	2	28	87.50
509	34.5	8	23.19	4	3	15	43.48
511	36.5	20	54.80	2	0	22	60.27
513	36.0	23	63.89	2	2	27	75.00
518	34.5	25	72.46	1	3	29	84.06
520	35.0	16	45.71	0	4	20	57.14
523	35.0	23	65.71	2	3	28	80.00
527	34.5	6	17.39	1	3	10	28.99
530	38.5	6	15.58	1	5	12	31.17
601	36.5	6	16.44	1	5	12	32.88
603	37.0	6	16.22	1	0	7	18.92
TOTAL	614.0	276	44.95	37	46	359	58.47

Table 10. Daily banding totals Shaker Lakes, spring 2011.

Species	Banded	Species	Banded	Species	Banded
Hairy Woodpecker	1	Indigo Bunting	1	Mourning Warbler	4
Downy Woodpecker	2	Red-eyed Vireo	1	Common Yellowthroat	9
Red-bellied Woodpecker	2	Philadelphia Vireo	2	Wilson's Warbler	6
Eastern Phoebe	2	Warbling Vireo	1	Canada Warbler	12
Eastern Wood Pewee	2	Blue-headed Vireo	1	American Redstart	5
Trail's Flycatcher	2	White-eyed Vireo	1	Gray Catbird	27
Least Flycatcher	3	Black and White Warbler	2	House Wren	2
Blue Jay	3	Blue-winged Warbler	1	Brown Creeper	2
Brown-headed Cowbird	2	Nashville Warbler	7	Tufted Titmouse	3
Red-winged Blackbird	1	Tennessee Warbler	2	Black-capped Chickadee	2
American Goldfinch	15	Yellow Warbler	4	Golden-crowned Kinglet	6
White-throated Sparrow	15	Black-th.-Blue Warbler	4	Ruby-crowned Kinglet	42
Slate-colored Junco	3	Myrtle Warbler	1	Blue-gray Gnatcatcher	2
Song Sparrow	6	Magnolia Warbler	11	Wood Thrush	3
Lincoln Sparrow	3	Blackpoll Warbler	1	Veery	2
Swamp Sparrow	1	Western Palm Warbler	4	Swainson's Thrush	4
Fox Sparrow	2	Ovenbird	3	Hermit Thrush	1
Northern Cardinal	4	Northern Waterthrush	8	American Robin	20

Table 11. Point count days conducted and species totals, spring season, Shaker Lakes, 2011.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Herring Gull	5	7	American Crow	4	4	Blk-th.-Green Warbler	1	1
Mallard	8	11	Brown-head. Cowbird	7	16	Western Palm Warbler	2	2
Wood Duck	10	22	Red-wing . Blackbird	10	23	Ovenbird	3	3
Canada Goose	12	71	Baltimore Oriole	7	9	Wilson's Warbler	2	2
Great Blue Heron	1	1	Common Grackle	3	6	Canada Warbler	1	1
Solitary Sandpiper	1	1	American Goldfinch	18	81	American Redstart	2	3
Mourning Dove	5	6	Wh.-throated Sparrow	5	6	Gray Catbird	9	14
Rock Pigeon	9	29	Song Sparrow	18	60	House Wren	1	1
Sharp-shinned Hawk	1	1	Eastern Towhee	1	1	Brown Creeper	1	1
Red-tailed Hawk	3	3	No. Cardinal	17	46	White-br. Nuthatch	5	6
Belted Kingfisher	2	2	Rose-br. Grosbeak	1	1	Tufted Titmouse	18	51
Hairy Woodpecker	3	3	Indigo Bunting	1	1	Black-cap. Chickadee	14	28
Downy Woodpecker	1	1	Barn Swallow	1	2	Ruby-cr. Kinglet	3	6
Yellow-bellied Sapsu.	1	1	N. Rough-wing Swal.	1	2	Blue-gray Gnatcatcher	5	8
Pileated Woodpecker	1	1	Red-eyed Vireo	8	24	Wood Thrush	4	6
Red -bell Woodpecker	13	17	Warbling Vireo	9	15	Swainson's Thrush	1	1
Yell-shaft Flicker	2	2	Nashville Warbler	1	1	Hermit Thrush	1	1
Chimney Swift	5	14	Tennessee Warbler	2	4	American Robin	18	91
Ru.-th. Hummingbird	5	5	Northern Parula	1	1	Unk. Blackbird	1	1
Gr-cr Flycatcher	7	13	Yellow Warbler	12	20	Unk. Duck	1	1
Eastern Phoebe	5	6	Black-th.-Blue Warbler	3	4	Unk. Flycatcher	1	1
Eastern Wood Pewee	5	6	Myrtle Warbler	3	8	Unk. Gull	3	3
Least Flycatcher	1	1	Magnolia Warbler	5	7	Unk. Warbler	4	7
Blue Jay	8	9	Chest.-sid. Warbler	2	3	Unk. Woodpecker	1	2

Table 12. Daily banding totals for Navarre, fall 2011.

Date	Net Hour	Banded	Banded/100 net hr	Returns	Recaptures	Total birds*	Total bird/ 100 net hr
704	92.0	34	36.96	5	18	57	61.96
805	92.0	35	38.04	2	3	40	43.48
820	69.0	24	34.78	0	0	24	34.78
821	111.1	19	17.10	0	1	20	18.00
822	111.1	10	9.00	1	0	11	9.90
823	103.5	20	19.32	0	0	20	19.32
824	124.6	16	12.84	0	4	20	16.05
825	115.0	9	7.83	0	5	14	12.17
826	115.0	32	27.83	0	6	38	33.04
827	111.1	12	10.80	0	3	15	13.50
828	107.4	17	15.83	0	0	17	15.83
829	103.5	17	16.43	0	2	19	18.36
830	107.4	33	30.73	0	5	38	35.38
831	107.4	31	28.86	0	4	35	32.59
901	115.0	33	28.70	0	3	36	31.30
902	115.0	31	26.96	0	4	35	30.44
903	115.0	27	23.48	0	7	34	29.57
904	109.3	25	22.87	0	2	27	24.70
905	109.3	30	27.45	0	2	32	29.28
906	115.0	38	33.04	0	9	47	40.87
907	RAIN						
908	RAIN						
909	92.0	72	78.28	1	3	76	82.61
910	115.0	88	76.52	0	11	99	86.09
911	101.6	103	101.38	0	9	112	110.24
912	134.2	72	53.65	0	12	84	62.59
913	151.5	77	50.83	1	15	93	61.39
914	115.0	35	30.44	0	13	48	41.74
915	126.5	89	70.36	1	16	106	83.79
916	145.6	71	48.77	0	18	89	61.13
917	113.1	59	52.17	0	5	64	56.59
918	116.9	31	26.52	0	17	48	41.06
919	105.4	21	19.92	0	5	26	24.67
920	138.0	57	41.30	0	12	69	50.00
921	172.5	113	65.51	1	14	128	74.20
922	172.5	132	76.52	1	24	157	91.01
923	RAIN						
924	168.6	153	90.75	2	24	179	106.17
925	131.1	82	62.55	0	27	109	83.14
926	RAIN						
927	134.2	117	87.18	0	45	162	120.72
928	161.0	125	77.64	0	62	187	116.15
929	138.0	131	94.93	0	36	167	121.01
930	134.2	198	147.54	0	50	248	184.80
1001	RAIN						
1002	139.9	238	170.12	1	58	297	212.29
1003	153.4	174	113.43	1	87	262	170.80
1004	136.1	113	83.03	0	44	161	118.30
1005	174.4	135	77.41	0	63	202	115.83
1006	122.6	72	58.73	0	35	107	87.28
1007	130.4	51	39.11	1	33	100	76.69
1008	143.8	85	59.11	0	49	134	93.19
1009	128.4	64	49.84	1	42	107	83.33
1010	141.8	83	58.53	0	59	142	100.14
1011	126.5	77	60.87	0	38	115	90.91
1012	111.2	31	27.88	1	38	70	62.95
1013	116.9	54	46.19	0	28	82	70.15
1014	159.1	102	64.11	1	57	160	100.57
1015	174.4	172	98.62	0	18	190	108.95
1016	101.6	109	107.28	0	19	128	125.98
1017	130.4	115	88.19	0	41	156	119.63
1018	124.6	117	93.90	0	44	161	129.21
1023	122.6	189	154.16	1	23	213	173.74
1102	82.4	33	40.05	1	9	43	52.18
TOTAL	7336.1	4333	59.06	23	1281	5660	77.15

* Total birds include Brown-headed Cowbirds and European Starlings released unbanded.

Table 13. Fall banding totals, Navarre 2011.

Species	Banded	Species	Banded	Species	Banded
Sharp-shinned Hawk	1	Fox Sparrow	21	Western Palm Warbler	2
Eastern Screech Owl	1	Eastern Towhee	1	Ovenbird	68
Yellow-billed Cuckoo	2	Northern Cardinal	38	Northern Waterthrush	28
Downy Woodpecker	18	Rose-breasted Grosbeak	4	Connecticut Warbler	11
Yellow-bellied Sapsucker	8	Indigo Bunting	7	Mourning Warbler	12
Red-bellied Woodpecker	2	Scarlet Tanager	4	Common Yellowthroat	89
Yellow-shafted Flicker	4	Cedar Waxwing	2	Yellow-breasted Chat	1
Ruby-th. Hummingbird	7	Red-eyed Vireo	75	Hooded Warbler	1
Eastern Kingbird	1	Philadelphia Vireo	14	Wilson's Warbler	14
Eastern Phoebe	12	Warbling Vireo	3	Canada Warbler	15
Eastern. Wood Pewee	14	Yellow-throated Vireo	2	American Redstart	37
Yellow-bellied Flycatcher	26	Blue-headed Vireo	9	Gray Catbird	220
Acadian Flycatcher	1	Black and White Warbler	26	Brown Thrasher	11
Traill's Flycatcher	1	Prothonotary Warbler	14	Carolina Wren	6
Least Flycatcher	4	Blue-winged Warbler	1	House Wren	18
Red-winged Blackbird	4	Golden-winged Warbler	2	Winter Wren	37
Baltimore Oriole	16	Nashville Warbler	71	Marsh Wren	1
Rusty Blackbird	10	Orange-crowned Warbler	12	Brown Creeper	60
Common Grackle	110	Tennessee Warbler	93	Red-breasted Nuthatch	1
Purple Finch	8	Northern Parula	1	Tufted Titmouse	3
American Goldfinch	7	Cape May Warbler	75	Black-capped Chickadee	5
Pine Siskin	1	Yellow Warbler	10	Golden-crowned Kinglet	112
White-crowned Sparrow	5	Black-th.-Blue Warbler	29	Ruby-crowned Kinglet	84
Gambel's W.-c Sparrow	1	Myrtle Warbler	399	Wood Thrush	7
White-throated Sparrow	228	Magnolia Warbler	184	Veery	20
American Tree Sparrow	1	Chestnut-sided Warbler	10	Gray-cheeked Thrush	325
Field Sparrow	1	Bay-breasted Warbler	32	Swainson's Thrush	463
Slate-colored Junco	18	Blackpoll Warbler	762	Hermit Thrush	144
Song Sparrow	29	Blackburnian Warbler	6	American Robin	35
Lincoln Sparrow	7	Black-th.-Green Warbler	16		
Swamp Sparrow	30	Pine Warbler	2		

Table 14. Number of days observed and totals of species seen on point counts, Navarre fall 2011.

Species	# days	#Observed	Species	# days	#Observed	Species	# days	#Observed
Herring Gull	7	13	Willow Flycatcher	1	1	Cape May Warbler	4	6
Ring-billed Gull	25	172	Least Flycatcher	1	1	Black-th-Blue Warbler	1	1
Bonaparte's Gull	4	17	Horned Lark	1	1	Myrtle Warbler	18	194
Caspian Tern	11	15	Blue Jay	37	152	Magnolia Warbler	16	26
Forster's Tern	1	5	American Crow	1	3	Chestnut-sided Warbler	1	1
D-c. Cormorant	8	47	European Starling	40	778	Bay-breasted Warbler	1	1
Mallard	22	143	Brown-headed Cowbird	4	6	Blackpoll Warbler	34	159
American Black Duck	1	2	Red-winged Blackbird	47	4957	Blackburnian Warbler	1	1
Gadwall	2	36	Baltimore Oriole	15	63	Blk.-th-green Warbler	1	1
American Wigeon	1	25	Rusty Blackbird	15	229	Ovenbird	11	15
Am. Green-winged Teal	1	6	Common Grackle	43	1016	No. Waterthrush	2	2
Wood Duck	22	274	Purple Finch	6	33	Mourning Warbler	1	1
Canada Goose	48	1178	House Finch	4	8	Common Yellowthroat	11	15
Trumpeter Swan	4	7	American Goldfinch	18	53	American Redstart	2	3
Great- blue Heron	32	51	Pine Siskin	11	24	Gray Catbird	42	249
Great Egret	3	3	Lapland Longspur	1	1	Brown Thrasher	8	9
Wilson's Snipe	1	1	White-th. Sparrow	19	450	Carolina Wren	41	102
Killdeer	4	6	Slate-colored Junco	4	7	House Wren	8	9
Mourning Dove	6	6	Song Sparrow	14	31	Winter Wren	13	26
Red-tailed Hawk	2	2	Fox Sparrow	2	5	Marsh Wren	1	1
Bald Eagle	9	10	Eastern Towhee	13	21	Brown Creeper	4	6
Great-horned Owl	1	1	Northern Cardinal	52	375	Red-br. Nuthatch	2	2
Yellow-billed Cuckoo	1	1	Rose-br. Grosbeak	8	9	Black.-cap. Chickadee	24	36
Belted Kingfisher	1	1	Purple Martin	7	20	Tufted Titmouse	1	1
Downy Woodpecker	42	95	Barn Swallow	5	5	Golden-cr. Kinglet	8	19
Yellow-bel. Sapsucker	3	3	Tree Swallow	18	92	Ruby-cr. Kinglet	16	55
Red-bell. Wood.	11	11	Bank Swallow	10	202	Wood Thrush	1	1
Yellow-sh. Flicker	21	40	N. Rough-wing. Swal.	1	1	Veery	2	2
Chimney Swift	13	63	Cedar Waxwing	30	235	Gray-cheeked Thrush	34	132
Ruby-th. Hummingbird	1	1	Red-eyed Vireo	6	10	Swainson's Thrush	39	228
Great-cr. Flycatcher	2	2	Blue-headed Vireo	1	1	Hermit Thrush	7	23
Eastern Kingbird	4	5	Warbling Vireo	10	17	American Robin	40	319
Eastern Phoebe	4	5	Nashville Warbler	1	1	Unk. Finch	1	1
Eastern Wood Pewee	11	17	Tennessee Warbler	1	1	Unk. Warbler	42	262

Table 15. Daily banding totals for Navarre Beach, fall 2011.

Date	Net Hour	Banded	Banded/100 nh	Returns	Recaptures	Total birds*	Totalbird/100nh
820	15.8	7	44.30	0	1	8	50.63
821	19.2	4	20.83	0	1	5	26.04
822	25.0	6	24.00	0	1	7	28.00
823	22.9	15	65.50	0	1	16	69.87
824	27.1	11	40.59	0	2	13	47.97
825	27.5	7	25.46	0	1	8	29.09
826	25.0	0	0.00	1	2	3	12.00
827	19.2	7	36.46	0	0	7	36.46
828	WIND						
829	23.4	2	8.55	0	0	2	8.55
830	19.2	10	52.08	0	2	12	62.50
831	25.0	3	12.00	0	0	3	12.00
901	25.0	13	52.00	0	0	13	52.00
902	24.2	7	28.93	0	3	10	41.32
903	25.0	4	16.00	0	1	5	20.00
904	24.2	6	24.79	0	0	6	24.79
905	24.2	3	12.40	0	0	3	12.40
906	WIND						
907	RAIN						
908	RAIN						
909	WIND						
910	24.6	7	28.46	2	1	10	40.65
911	23.8	12	50.42	0	0	12	50.42
912	29.6	48	162.16	1	1	50	168.92
913	32.9	64	194.53	0	5	69	209.73
914	26.7	4	14.98	0	0	4	14.98
915	WIND						
916	31.3	2	6.39	1	0	3	9.59
917	25.0	2	8.00	1	1	4	16.00
918	26.3	2	7.61	1	0	3	11.41
919	4.2	1	23.81	0	1	2	47.62
920	30.0	10	33.33	1	5	16	53.33
921	35.8	149	416.20	0	7	156	435.75
922	36.3	86	236.92	1	12	100	275.48
923	RAIN						
924	37.1	19	51.21	1	5	25	67.39
925	30.8	5	16.23	0	0	5	16.23
926	RAIN						
927	29.2	19	65.07	0	3	22	75.34
928	35.8	27	75.42	0	7	34	94.97
929	25.8	59	228.68	0	5	64	248.06
930	25.8	26	100.78	0	4	30	116.28
1001	RAIN						
1002	30.8	25	81.17	1	4	30	97.40
1003	33.8	49	144.97	1	10	60	177.52
1004	30.0	25	83.33	0	5	30	100.00
1005	38.4	68	177.08	0	6	74	192.71
1006	27.9	20	71.69	0	1	21	75.27
1007	27.9	12	43.01	1	3	16	57.35
1008	30.0	16	53.33	1	4	21	70.00
1009	29.6	14	47.30	0	5	19	64.19
1010	31.3	14	44.73	0	3	17	54.31
1011	29.2	17	58.22	0	3	20	68.49
1012	25.0	4	16.00	0	7	11	44.00
1013	27.1	7	25.83	0	1	8	29.52
1014	33.8	6	17.75	1	3	10	29.59
1015	34.2	30	87.72	0	7	37	108.19
1016	20.8	79	379.81	0	1	80	384.62
1017	27.1	19	70.11	0	9	28	103.32
1018	26.7	19	71.16	0	7	26	97.38
1023	22.5	21	93.33	0	4	25	111.11
TOTAL	1409.0	1092	77.50	15	155	1263	89.64

* Total birds include Brown-headed Cowbirds and European Starlings released unbanded.

Table 16. Fall banding totals, Navarre Beach 2011.

Species	Banded	Species	Banded	Species	Banded
Mourning Dove	1	Cedar Waxwing	3	Northern Waterthrush	2
Downy Woodpecker	9	Red-eyed Vireo	10	Connecticut Warbler	1
Yellow-bellied Sapsucker	1	Philadelphia Vireo	2	Mourning Warbler	3
Ruby-th. Hummingbird	1	Warbling Vireo	13	Common Yellowthroat	27
Eastern Phoebe	6	Blue-headed Vireo	4	Canada Warbler	2
Eastern Wood Pewee	5	Black and White Warbler	4	American Redstart	1
Yellow-bellied Flycatcher	4	Prothonotary Warbler	1	Gray Catbird	96
Trail's Flycatcher	1	Nashville Warbler	16	Brown Thrasher	2
Least Flycatcher	2	Orange-crowned Warbler	1	Carolina Wren	2
Red-winged Blackbird	5	Tennessee Warbler	33	House Wren	3
Baltimore Oriole	14	Northern Parula	3	Winter Wren	10
Common Grackle	6	Cape May Warbler	24	Marsh Wren	1
American Goldfinch	2	Yellow Warbler	3	Brown Creeper	6
White-crowned Sparrow	3	Black-th. Blue Warbler	4	Tufted Titmouse	3
White-throated Sparrow	26	Myrtle Warbler	82	Black-capped Chickadee	2
Chipping Sparrow	1	Magnolia Warbler	19	Golden-crowned Kinglet	33
Field Sparrow	1	Chestnut-sided Warbler	6	Ruby-crowned Kinglet	24
Slate-colored Junco	5	Bay-breasted Warbler	25	Veery	1
Song Sparrow	12	Blackpoll Warbler	394	Gray-cheeked Thrush	19
Swamp Sparrow	7	Blackburnian Warbler	5	Swainson's Thrush	32
Eastern Towhee	1	Black-th.-Green Warbler	1	Hermit Thrush	35
Northern Cardinal	4	Western Palm Warbler	5	American Robin	2
Indigo Bunting	2	Ovenbird	8		

Table 17 . Daily banding totals for Creek Bend County Park, fall 2011.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
904	21.0	39	185.71	1	1	41	195.24
905	40.0	59	147.50	2	1	62	155.00
906	36.0	20	55.56	4	0	24	66.67
912	60.0	113	188.33	3	3	119	198.33
913	19.5	7	35.90	2	2	11	56.41
914	67.5	64	94.82	0	0	64	94.82
915	50.0	30	60.00	1	1	32	64.00
916	50.0	36	72.00	0	1	37	74.00
920	50.0	52	104.00	1	6	59	118.00
922	40.0	43	107.50	1	4	48	120.00
924	30.0	10	33.33	0	5	15	50.00
925	40.0	30	75.00	2	3	35	87.50
1003	35.0	49	140.00	3	3	55	157.14
1004	45.0	93	206.67	5	1	99	220.00
1008	45.0	225	500.00	0	0	225	500.00
1009	67.5	149	220.74	5	2	156	231.11
1013	54.0	61	112.96	3	14	78	144.44
1021	10.0	23	230.00	0	0	23	230.00
1022	55.0	49	89.09	0	9	58	105.46
1023	55.0	139	252.73	2	23	164	298.18
1028	55.0	105	190.91	1	7	113	205.46
1029	45.0	173	384.44	0	1	174	386.67
1030	35.0	24	68.57	1	5	30	85.71
1101	40.5	6	14.82	0	3	9	22.22
1108	50.0	2	4.00	0	2	4	8.00
TOTAL	1096.0	1601	146.08	37	97	1735	158.30

Table 18. Fall banding totals for Creek Bend County Park, fall 2011.

Species	Banded	Species	Banded	Species	Banded
Downy Woodpecker	1	Indigo Bunting	78	Connecticut Warbler	2
Yellow-bellied Sapsucker	1	Cedar Waxwing	5	Common Yellowthroat	40
Red-bellied Woodpecker	1	Red-eyed Vireo	2	Wilson's Warbler	8
Eastern Phoebe	2	Philadelphia Vireo	2	American Redstart	18
Traill's Flycatcher	3	Blue-headed Vireo	2	Gray Catbird	27
Least Flycatcher	2	Black and White Warbler	8	Brown Thrasher	1
Common Grackle	6	Nashville Warbler	36	Carolina Wren	1
House Finch	10	Orange-crowned Warbler	3	House Wren	11
American Goldfinch	811	Tennessee Warbler	25	Winter Wren	5
Pine Siskin	1	Cape May Warbler	2	Brown Creeper	2
White-crowned Sparrow	11	Yellow Warbler	1	White-breasted Nuthatch	2
White-throated Sparrow	64	Black-th. Blue Warbler	3	Tufted Titmouse	4
American Tree Sparrow	3	Myrtle Warbler	55	Black-capped Chickadee	7
Chipping Sparrow	3	Magnolia Warbler	38	Golden-crowned Kinglet	1
Field Sparrow	23	Chestnut-sided Warbler	1	Ruby-crowned Kinglet	14
Slate-colored Junco	12	Bay-breasted Warbler	3	Veery	1
Song Sparrow	89	Blackpoll Warbler	15	Gray-cheeked Thrush	8
Lincoln's Sparrow	29	Blackburnian Warbler	1	Swainson's Thrush	14
Swamp Sparrow	43	Black-th. Green Warbler	4	Hermit Thrush	3
Fox Sparrow	2	Westrn Palm Warbler	7	American Robin	1
Northern Cardinal	6	Ovenbird	10	Eastern Bluebird	3
Rose-breasted Grosbeak	3	Northern Waterthrush	4		

Table 19. Daily banding totals for Petersburg, fall 2011.

Date	Net Hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
830	130.0	19	14.62	0	3	22	16.92
906	173.4	31	17.88	1	6	38	21.91
917	156.7	52	33.18	0	6	58	37.01
918	150.0	8	5.33	0	4	12	8.00
1002	170.0	12	7.06	0	7	19	11.18
1009	138.3	13	9.40	1	3	17	12.29
TOTAL	918.4	135	14.70	2	29	166	18.07

Table 20. Daily banding totals Petersburg, fall 2011.

Species	Banded	Species	Banded	Species	Banded
Sharp-shinned Hawk	1	Black-th.-Blue Warbler	2	American Redstart	4
Yellow-bellied Flycatcher	1	Myrtle Warbler	2	Gray Catbird	8
Blue Jay	1	Magnolia Warbler	13	White-breasted Nuthatch	1
American Goldfinch	1	Chestnut-sided Warbler	2	Tufted Titmouse	4
White-throated Sparrow	4	Bay-breasted Warbler	2	Black- capped Chickadee	6
Northern Cardinal	5	Blackpoll Warbler	19	Ruby-crowned Kinglet	5
Red-eyed Vireo	1	Black-th. Green Warbler	7	Wood Thrush	1
Philadelphia Vireo	2	Ovenbird	9	Gray-cheeked Thrush	4
Warbling Vireo	2	Northern Waterthrush	1	Swainson's Thrush	3
Black and White Warbler	5	Common Yellowthroat	2	Hermit Thrush	1
Nashville Warbler	6	Wilson Warbler	1	American Robin	6
Tennessee Warbler	3				

Table 21. Point count days conducted and species totals, fall season, Petersburg, 2011.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Canada Goose	1	2	American Crow	5	15	Gray Catbird	3	8
Mourning Dove	3	4	European Starling	1	1	White-br. Nuthatch	3	3
Cooper's Hawk	1	1	Red-winged Blackbird	1	2	Tufted Titmouse	1	1
Eastern Screech Owl	1	1	American Goldfinch	5	12	Black-cap. Chickadee	3	4
Great Horned Owl	1	1	Northern Cardinal	2	2	American Robin	5	39
Blue Jay	6	27						

Table 22. Daily banding totals for Shaker Lakes, fall 2011.

Date	Net hour	Banded	Banded/ 100 net hr	Returns	Recaptures	Total birds	Total bird/ 100 net hr
822	30.0	11	36.67	1	4	16	53.33
824	24.0	6	25.00	0	0	6	25.00
826	31.0	31	100.00	0	2	33	106.45
829	31.5	7	22.22	0	2	9	28.57
831	29.5	13	44.07	1	5	19	64.40
902	30.0	6	20.00	0	0	6	20.00
912	31.5	9	28.57	0	2	11	34.92
914	29.0	18	62.07	0	3	21	72.41
916	29.0	28	96.55	0	2	30	103.45
919	38.0	42	110.53	1	6	49	128.95
921	28.0	29	103.57	0	7	36	128.57
923	15.5	3	19.35	0	0	3	19.35
926	26.5	12	45.28	0	2	14	52.83
928	30.0	56	186.67	0	3	59	196.67
930	28.5	34	119.30	1	7	42	147.37
1005	26.5	30	113.21	0	0	30	113.21
1007	31.0	74	238.71	0	2	76	245.16
1010	32.0	56	175.00	0	4	60	187.50
1014	23.5	20	85.11	0	3	23	97.88
1025	37.5	54	144.00	1	5	60	160.00
1028	27.5	32	116.36	0	4	36	130.91
1102	45.0	138	306.67	1	7	146	324.44
1107	22.5	16	71.11	0	2	18	80.00
Total	708.5	725	102.33	6	72	803	113.34

Table 23. Daily banding totals Shaker Lakes, fall 2011.

Species	Banded	Species	Banded	Species	Banded
Downy Woodpecker	4	Red-eyed Vireo	3	Common Yellowthroat	1
Eastern Phoebe	4	Blue-headed Vireo	2	Wilson's Warbler	17
Eastern Wood-Pewee	4	Black and White Warbler	5	Canada Warbler	3
Yellow-bellied Flycatcher	13	Nashville Warbler	34	American Redstart	7
Acadian Flycatcher	1	Tennessee Warbler	8	Gray Catbird	21
Traill's Flycatcher	1	Black-thr. Blue Warbler	5	House Wren	1
Least Flycatcher	4	Myrtle Warbler	72	Winter Wren	2
Blue Jay	2	Magnolia Warbler	49	Brown Creeper	1
Common Grackle	6	Chestnut-sided Warbler	4	Tufted Titmouse	3
American Goldfinch	190	Bay-breasted Warbler	3	Black-capped Chickadee	7
Pine Siskin	1	Blackpoll Warbler	17	Golden-crowned Kinglet	21
White-crowned Sparrow	1	Blackburnian Warbler	2	Ruby-crowned Kinglet	23
White-throated Sparrow	31	Black-th. Green Warbler	8	Veery	2
Slate-colored Junco	12	Western Palm Warbler	1	Gray-cheeked Thrush	17
Song Sparrow	9	Ovenbird	3	Swainson's Thrush	56
Northern Cardinal	9	Northern Waterthrush	6	Hermit Thrush	9
Rose-breasted Grosbeak	1	Connecticut Warbler	1	American Robin	18

Table 24. Point count days conducted and species totals, fall season, Shaker Lakes, 2011.

Species	# days	# birds	Species	# days	# birds	Species	# days	# birds
Mallard	9	24	Ruby-th. Hummingbird	6	7	Gray Catbird	7	10
Wood Duck	3	6	E. Wood-Pewee	4	4	White-br. Nuthatch	13	15
Canada Goose	6	87	Blue Jay	8	13	Tufted Titmouse	3	4
Great Blue Heron	6	7	American Crow	2	101	Black-capped Chickadee	6	9
Mourning Dove	1	2	American Goldfinch	21	171	Golden-crowned Kinglet	2	3
Rock Pigeon	4	16	White-throated Sparrow	4	18	Ruby-crowned Kinglet	4	4
Cooper's Hawk	5	5	Slate-colored Junco	1	5	Veery	1	1
Red-tailed Hawk	2	3	Song Sparrow	18	32	Swainson's Thrush	4	4
Red-shouldered Hawk	2	2	Swamp Sparrow	2	2	Hermit Thrush	1	1
Osprey	1	1	Northern Cardinal	10	13	American Robin	14	45
Barred Owl	1	1	Rose-breasted Grosbeak	1	2	Unk. Warbler	5	10
Belted Kingfisher	6	7	Indigo Bunting	1	1	Unk. Blackbird	1	10
Hairy Woodpecker	2	2	Red-eyed Vireo	1	1	Unk. Kinglet	1	1
Downy Woodpecker	8	10	Nashville Warbler	1	2	Unk. Thrush	2	3
Yellow-breasted Sapsucker	1	2	Myrtle Warbler	3	4	Unk. Gull	1	1
Red-bellied Woodpecker	11	12	Magnolia Warbler	1	1	Unk. Hawk	1	1
Yellow-shafted Flicker	3	4	Common Yellowthroat	1	1	Unk. Woodpecker	3	3
Chimney Swift	10	887						

Table 25. Total bandings Black Swamp Bird Observatory, passerine migration , 2011.

Species	Banded	Species	Banded	Species	Banded
Wood Duck	0 (1)	(3) White-th. Sparrow	978 (1101)	Bay-breasted Warbler	95 (104)
Mourning Dove	1	Am. Tree Sparrow	1 (4)	(2) Blackpoll Warbler	1266(1319)
Sharp-shinned Hawk	13 (14)	Chipping Sparrow	1 (9)	Blackburnian Warbler	46 (49)
Cooper's Hawk	1	Field Sparrow	11 (38)	Yellow-thr. Warbler	1
Red-tailed Hawk	1	Slate-colored Junco	33 (67)	Blk.-th. Grn. Warbler	124 (148)
American Kestrel	1	Song Sparrow	62 (166)	Pine Warbler	11
Eastern Screech Owl	1	Lincoln Sparrow	119 (154)	West. Palm Warbler	471 (498)
Yellow-billed Cuckoo	5	Swamp Sparrow	167 (171)	Prairie Warbler	1
Black-billed Cuckoo	5	Fox Sparrow	43 (47)	Ovenbird	274 (302)
Hairy Woodpecker	5 (7)	Eastern Towhee	9	Northern Waterthrush	187 (208)
Downy Woodpecker	33 (43)	Northern Cardinal	110 (141)	Louisiana Waterthr.	1
Yellow-bell. Sapsucker	11 (12)	Rose-breasted Grosbeak	28 (34)	Connecticut Warbler	22 (25)
Red-headed Woodpecker	1	Indigo Bunting	73 (154)	Mourning Warbler	141 (147)
Red-bellied Woodpecker	4 (7)	Scarlet Tanager	10	(10) C. Yellowthroat	466 (524)
Yellow-shafted Flicker	11	Summer Tanager	3	Yellow-breasted Chat	4
Whip-poor-will	2	Tree Swallow	23 (30)	Hooded Warbler	12
Ruby-th. Hummingbird	88	Cedar Waxwing	22 (27)	Wilson's Warbler	273 (306)
Eastern Kingbird	6	Red-eyed Vireo	239 (246)	Canada Warbler	237 (254)
Great-crested Flycatcher	24	Philadelphia Vireo	41 (47)	American Redstart	390 (449)
Eastern Phoebe	18 (26)	Warbling Vireo	39 (43)	(6) Gray Catbird	830 (926)
Eastern Wood-Pewee	61 (68)	Yellow-throated Vireo	3	Brown Thrasher	28 (32)
Yellow-bell. Flycatcher	229 (244)	Blue-headed Vireo	5	Carolina Wren	14 (15)
Acadian Flycatcher	25 (26)	White-eyed Vireo	3 (4)	House Wren	77 (94)
(10) Traill's Flycatcher	516 (524)	Black and White Warbler	140 (167)	Winter Wren	51 (58)
Least Flycatcher	65 (79)	Prothonotary Warbler	26	Marsh Wren	3
Blue Jay	23 (32)	Worm-eating Warbler	2	Brown Creeper	84 (89)
Brown-headed Cowbird	2 (5)	Blue-winged Warbler	22 (25)	White-br Nuthatch	1 (4)
Red-winged Blackbird	109 (111)	Brewster's Warbler	1	Red-br. Nuthatch	8 (9)
Orchard Oriole	1	Golden-winged Warbler	2	Tufted Titmouse	6 (25)
Baltimore Oriole	77 (79)	(9) Nashville Warbler	492 (580)	Black-cap. Chickadee	9 (34)
Rusty Blackbird	12	Orange-crowned Warbler	30 (33)	Golden-cr. Kinglet	151 (184)
Common Grackle	138 (154)	Tennessee Warbler	210 (248)	Ruby-cr Kinglet	237 (327)
Purple Finch	10	Northern Parula	20	Blue-gray Gnatcatch.	130 (134)
House Finch	0 (10)	Cape May Warbler	125 (127)	Wood Thrush	45 (53)
(4) American Goldfinch	42 (1082)	(8) Yellow Warbler	576 (590)	Veery	117 (127)
Pine Siskin	1 (3)	Black-th. Blue Warbler	116 (132)	Gray-cheek Thrush	392 (424)
Savannah Sparrow	1	(1) Myrtle Warbler	1847 (1995)	(7) Swainson Thrush	754 (844)
LeConte's Sparrow	1	(5) Magnolia Warbler	941 (1065)	Hermit Thrush	335 (350)
White-cr. Sparrow	79 (92)	Cerulean Warbler	2	American Robin	68 (123)
Gambel's W-c Sparrow	5	Chestnut-sided Warbler	180 (197)	Eastern Bluebird	0 (5)

() numbers in bold are top ten banded species

Table 26. Banding effort totals by area and by season, 2010.

Area	Sample Days	Net Hours	Birds Banded	Birds/ 100 Net Hr	Total Captured	Total/ 100 Net Hr
Navarre	104	15,255.4	15,785	103.47	18,865	123.66
Petersburg	15	2,415.1	367	15.20	473	19.59
Shaker Lakes	41	1,322.5	1,001	75.69	1,162	87.86
Creek Bend	29	1,240	1,664	134.19	1,820	146.77
Season	Sample Days	Net Hours	Birds Banded	Birds/ 100 Net Hr	Total Captured	Total/ 100 Net Hr
All Stations						
Spring	48	8,765	10,931	124.71	12,693	144.81
Fall	67	11,468	7,886	68.77	9,627	83.95
TOTAL	115	20,233	18,817	93.00	22,320	110.31
ONWR Stations						
Spring	45	6,510.3	10,360	159.13	11,942	183.43
Fall	59	8,745.1	5,425	62.03	6,923	79.16
TOTAL	104	15,255.4	15,785	103.47	18,865	123.66

Table 27. Fall age ratios of selected species, Navarre 2011.

Species	2011		2010		Percent Change	91-10Ave. HY/AHY	2011 % Change from avg.
	Sample	HY/AHY	Sample	HY/AHY			
Baltimore Oriole	30	2.00	20	1.86	+8	5.84	-66
Wh-th Sparrow*	254	2.18	414	2.09	+4	3.97	-45
Song Sparrow	41	1.05	33	5.6	-83	2.33	-55
Cedar Waxwing	5	0.67	37	5.17	-87	1.93	-65
Red-eyed Vireo	85	4.67	71	4.92	+5	6.84	-32
Warbling Vireo	16	15.00	26	7.67	+96	10.48	+43
Bl. and Wh. Warbler	30	2.00	38	1.71	+17	1.97	+2
Nashville Warbler	87	2.11	65	2.25	-6	2.74	-23
Tennessee Warbler	126	4.48	96	8.6	-48	6.90	-35
Cape May Warbler	99	1.02	68	1.06	-4	1.19	-14
Bl-thr. Blue Warb.	33	3.71	92	4.41	-16	3.57	+4
Myrtle Warbler	481	2.49	216	3.41	-27	2.14	+16
Magnolia Warbler	203	2.69	200	3.55	-24	3.51	-23
Blackpoll Warbler	1156	1.60	1008	2.32	-31	2.12	-25
Ovenbird	76	4.85	126	6	-19	7.14	-32
No. Waterthrush	30	3.29	20	2.33	+41	4.20	-22
Com. Yellowthroat	116	4.80	150	6.5	-26	7.01	-32
American Redstart	38	2.17	111	1.64	+32	2.47	-12
Gray Catbird	316	7.78	331	5.37	+45	8.62	-10
House Wren	21	6.00	30	1.31	+358	6.35	-6
Gray-cheek Thrush	344	1.44	275	2.44	-41	2.04	-29
Swainson's Thrush	495	1.38	744	1.43	-3	1.52	-9
Hermit Thrush	179	5.88	271	6.13	-4	5.39	+9
American Robin	37	3.11	63	2.94	+6	3.32	-6

*Species in bold have samples sizes for both 2010 and 2011 over 50.

Table 28. Banding year of returning birds captured at Navarre study site, 2011.

Species	2010	2009	2008	2007	2006	2005	Total
Downy Woodpecker	2		1				3
Ruby-th Hummingbird	1						1
Blue Jay	2	1				1	4
Red-winged Blackbird	11	9	2	4	2	1	29
Baltimore Oriole	4	2	2	1	3	1	13
Common Grackle			1	1			2
Song Sparrow	1	1					2
Northern Cardinal	10	2	3	3	1		19
Indigo Bunting	2		1				3
Tree Swallow	1	2	1				4
Red-eyed Vireo	1						1
Warbling Vireo	2	1					3
Prothonotary Warbler	3		2				5
Yellow Warbler	48	18	12	1	3	1	83
Blackpoll Warbler	3	1	1	1	1		7
Com. Yellowthroat	9	3	2	1	3		18
Gray Catbird	38	8	10	8		2	66
Brown Thrasher	1		2				3
White-br. Nuthatch	1						1
Black-cap. Chickadee	5	1	2				8
House Wren	3		1				4
American Robin	9	2	2	1	1		15
Total	157	51	45	21	14	6	294

Table 29. Banding year of returning birds captured at Shaker Lakes study site, 2011.

Species	2010	2009	2008	2007	2006	2005	Total
Hairy Woodpecker		1		1			2
Downy Woodpecker		1	1				2
Red-bellied Woodpecker			1		1		2
Brown-headed Cowbird			1				1
American Goldfinch	1			1			2
Song Sparrow	3	4		1	1		9
Northern Cardinal		3	1			1	5
Red-eyed Vireo				1			1
Yellow Warbler	1	1					2
Gray Catbird		2	1	2	1		6
Tufted Titmouse	1	2					3
Black-capped Chickadee	2	2	1	1	1		7
Blue-gray Gnatcatcher		1					1
Wood Thrush			1				1
American Robin	1						1
Total	9	17	7	7	4	1	45

Table 30. Banding year of returning birds captured at Creek Bend study site, 2011.

Species	2010	2009	2008	Total
Downy Woodpecker	1		1	2
Baltimore Oriole		1		1
American Goldfinch	15	6		21
Field Sparrow	4			4
Song Sparrow	4	2		6
Northern Cardinal	1			1
Indigo Bunting	5	1	1	7
Yellow Warbler	2	2		4
Gray Catbird	3		1	4
Northern Mockingbird		1		1
Black-capped Chickadee	1			1
American Robin		1		1
Total	35	15	3	53

Table 31. Banding year of returning birds captured at Petersburg study site, 2011.

Species	2010	2009	2008	Total
Brown-headed Cowbird	2			2
Common Grackle		1		1
Slate-colored Junco	1			1
Northern Cardinal	3	2	1	6
Gray Catbird	1	1	1	3
Tufted Titmouse		1		1
Black-capped Chickadee	2		2	4
American Robin	3	1	1	5
Total	12	6	5	23

Table 32. Foreign recoveries of study banded birds since last progress report.

Species	Band Number	Band Date	Band Location*	Recovery Date	Recovery Location
Red-bellied Woodpecker	1292-25517	6-16-2010	Shaker Lakes	6-12-2011	Ohio 412-0813
Ruby-th. Hummingbird	3000-94543	5-14-2011	Navarre	7-1-2011	Michigan 414-0835
House Finch	1911-62574	11-24-2009	Creek Bend	6-25-2011	Ohio 412-0831
Northern Cardinal	2211-08990	4-18-2007	Navarre	9-15-2011	Ohio 413-0830
White-throated Sparrow	2241-90279	5-11-2007	Ontario 474-0794	5-04-2011	Navarre
Yellow Warbler	2540-70483	7-26-2009	Ohio 4100-08324	4-27-2011	Navarre
Yellow Warbler	2550-16253	7-27-2009	Navarre	5-14-2011	Ohio 413-0831
Magnolia Warbler	2530-93521	5-24-2010	New York 413-0774	5-21-2011	Navarre
Magnolia Warbler	2550-71583	5-20-2010	Ontario 4234-08025	5-13-2011	Navarre
Magnolia Warbler	2630-28080	5-12-2011	Navarre	5-22-2011	Petersburg
Gray Catbird	2531-75562	5-22-2011	Navarre	6-14-2011	Ohio 412-0825

*Banding coordinates for study sites: Navarre 413-0830, Shaker Lakes 412-0813, Ottawa NWR 413-0831, Creek Bend 412-0832, Petersburg 415-0833.

Table 33. Spring fat composition comparisons of selected species for 2010 and 2011, Navarre (Two sample T-Test, alpha = .05).

Sign. Higher 2010	Non-sign. Higher 2010	Sign. Higher 2011	Non- sign. Higher 2011
Traill's Flycatcher	Yellow-bellied Flycatcher	Golden-cr. Kinglet	White-throated Sparrow
Least Flycatcher	Swamp Sparrow		Cape May Warbler
Lincoln Sparrow	Red eyed Vireo		Northern Waterthrush
Indigo Bunting	Black & White Warbler		Gray-ch. Thrush
Nashville Warbler	Tennessee Warbler		Swainson's Thrush
Myrtle Warbler	Yellow Warbler		Hermit Thrush
Magnolia Warbler	Western Palm Warbler		
Chestnut-sided Warbler	Common Yellowthroat		
Bay-breasted Warbler	House Wren		
Blackpoll Warbler	Veery		
Ovenbird			
Mourning Warbler			
Wilson's Warbler			
Canada Warbler			
American Redstart			
Gray Catbird			
Ruby-cr. Kinglet			
Bl.-gr. Gnatcatcher			

Table 34. Fall fat composition comparisons of selected species for 2010 and 2011, Navarre (Two sample T-Test, alpha = .05).

Sign. Higher 2010	Non-sign. Higher 2010	Sign. Higher 2011	Non- sign. Higher 2011
		Wh.-throated Sparrow	Red-eyed Vireo
		Swamp Sparrow	Black & White Warbler
		Cape May Warbler	House Wren
		Myrtle Warbler	
		Magnolia Warbler	
		Blackpoll Warbler	
		Ovenbird	
		Common Yellowthroat	
		American Redstart	
		Gray Catbird	
		Golden-cr. Kinglet	
		Ruby-cr. Kinglet	
		Gray-ch. Thrush	
		Swainson's Thrush	
		Hermit Thrush	

Figure 1. Migration field sites, 1989- 2011.

